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**Fourth review of the financial mechanism**

# Synthesis report on the National Economic, Environment and Development Study (NEEDS) for Climate Change Project

## Note by the secretariat

*Summary*

This document synthesizes the information contained in the reports of 10 of the countries that participated in the National Economic, Environment and Development Study (NEEDS) for climate change project. The project was launched in response to a request made by the Subsidiary Body for Implementation, at its twenty-eighth session, for the secretariat to provide, upon request, information to Parties not included in Annex I to the Convention on the assessment of financing needs to implement mitigation and adaptation measures. This synthesis of the information provided by the countries involved in the NEEDS project includes an assessment of the financial resources needed to implement mitigation and adaptation measures in 2020 and 2050, and an assessment of the available and potential financial and policy instruments, including financial flows, to support climate change measures. The countries also provided information on the lessons learned from implementing the NEEDS project and recommendations on next steps to meet the needs identified in the country assessments.

# Contents

# I. Introduction

## A. Mandate

1. The Subsidiary Body for Implementation (SBI), at its twenty-eighth session, in its consideration of the fourth review of the financial mechanism on the basis of the guidelines contained in the annex to decision 6/CP.13 and in the annex to decision 3/CP.4, requested the secretariat to provide, upon request, information to Parties not included in Annex I to the Convention (non-Annex I Parties) on the assessment of financing needs to implement mitigation and adaptation measures.[1] In response to this mandate, the secretariat established the National Economic, Environment and Development Study (NEEDS) for climate change project.

2. Eleven non-Annex I Parties availed themselves of the support provided by the secretariat to conduct financial needs assessments. At its thirty-second session, the SBI requested the secretariat to compile and synthesize the information contained in the reports of the 11 countries that were involved in the NEEDS project, for consideration by the SBI at its thirty-third session.[2]

## B. Scope

3. This document synthesizes the information contained in the reports on the country studies conducted by 10 of the 11 countries which requested assistance from the secretariat. These 10 countries are: Costa Rica, Egypt, Ghana, Indonesia, Jordan, Lebanon, Maldives, Mali, Nigeria and Philippines. The other participating country, namely Pakistan, is currently undertaking its NEEDS analysis. The full country reports are accessible on the UNFCCC website,[3] where Pakistan's report will also be published when it is available.

4. In the NEEDS project, a bottom-up, country-driven approach was applied with regard to the methodologies used for the assessment of the financial needs for implementing climate change measures. A country-driven process was promoted in order to facilitate national consensus on adaptation and mitigation priorities. However, at the same time, this approach resulted in significant variations in overall findings and estimates across the different country studies.

## C. Possible action by the Subsidiary Body for Implementation

5. The SBI may wish to consider the key outcomes of the country studies, the lessons learned and the recommendations outlined in this document, as well as to provide guidance on possible next steps to assist developing countries in assessing their financial needs relating to the implementation of mitigation and adaptation measures.

[1] FCCC/SBI/2008/8, paragraph 30.
[2] FCCC/SBI/2010/10, paragraph 48.
[3] <http://unfccc.int/cooperation_and_support/financial_mechanism/items/5630.php>.

# II. Country profiles

## 1. National circumstances

6. Most countries have medium- and long-term development plans that serve as a blueprint for their socio-economic growth. In recent years, countries have increasingly incorporated environmental concerns, including climate change, into their national development plans. In some countries, the issue of climate change is being mainstreamed into local development planning processes.

7. The countries participating in the NEEDS project were selected on a first-come first-served basis. They are at different stages of economic development and represent different regions and constituencies in the United Nations system: Egypt, Ghana, Mali and Nigeria are from the African regional group; Indonesia, Jordan, Lebanon, Maldives and Philippines are from the Asian regional group; while Costa Rica is part of the Latin America and Caribbean regional group. The Maldives and Mali are least developed countries, although the Maldives is in the process of graduating from this category. Mali is also a landlocked developing country, whereas the Maldives is a small island developing State. Egypt and Nigeria represent two of the largest African economies, while Indonesia and the Philippines are among the largest Asian ones.

## 2. Greenhouse gas inventories

8. The year 2000 is the year for which many of the countries participating in the NEEDS project reported their national greenhouse gas (GHG) inventory data. Table 1 summarizes these data in terms of the countries' aggregate emissions and removals provided either for 2000 or the closest year indicated. Some of the countries included emissions and removals from the land-use change and forestry (LUCF) sector.

Table 1
**Aggregate emissions and removals with and without land-use change and forestry of countries participating in the National Economic, Environment and Development Study for climate change project**

| *Country* | *Total emissions and removals (without land-use change and forestry) (Mt $CO_2$ eq)* | *Total emissions and removals (with land-use change and forestry) (Mt $CO_2$ eq)* |
|---|---|---|
| Costa Rica (2000) | 11.10 | 7.94 |
| Egypt (2000)[a] | NA | 193 |
| Ghana (1996) | 9.09 | NA |
| Indonesia (2000) | 556.5 | 1 377.75 |
| Jordan (2000) | NA | 20.14 |
| Lebanon[b] | NA | 18.31 |
| Maldives (1994) | 0.13 | NA |
| Mali (1995) | 8.67 | –1.08 |
| Nigeria (2000) | 233.38 | 330.94 |
| Philippines (2000) | 126.88 | 19.5 |

*Abbreviation*: NA = not applicable.
[a] Treatment of the land-use change and forestry sector was not described in the report.
[b] The year for these emissions and removals was not identified in the report.

9. Most of the countries reported that the energy sector was the primary contributor to their total GHG emissions, followed by other sectors such as agriculture, industrial processes and waste, depending on the countries' national circumstances. In some of the countries, the LUCF sector had a significant impact on their aggregate emissions and removals.

10. Some of the countries reported their emissions and removals by GHG, such as carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide. In almost all the countries, $CO_2$ accounted for the largest share of their GHG emissions by source; while, in some countries, the level of $CH_4$ emissions was also high, owing to the significant role of the agriculture sector in their economies.

## 3. Vulnerability and adaptation assessments

11. Most of the countries provided information on the outcomes of their vulnerability and adaptation assessments. These countries conducted both national and sector-specific assessments, such as for agriculture, water resources, coastal zones, health and settlements.

12. In the conducted assessments, the countries used projections of climate indicators and climate change scenarios, while some countries also included socio-economic projections. The countries presented both qualitative and quantitative assessments of the potential climate change scenarios. Most of them reported a general increase in temperature, changes in precipitation and a high chance of extreme weather events, factors which indicate high vulnerability.

13. The countries in general identified different regions within their countries that were vulnerable to different factors related to the adverse impacts of climate change. For example, countries with low-lying areas identified the risk factors in these areas. Information provided by the countries on current and future key vulnerabilities focused on the impact of climate change on specific sectors/areas. Most of the countries reported key vulnerabilities in sectors/areas such as agriculture, water resources and coastal zones.

14. Almost all of the countries identified the agriculture sector as one of the most vulnerable sectors to climate change, and they provided detailed descriptions of this sector. Many reported that climate change affects the production/yield of crops owing to changes in temperature and precipitation. For example, Egypt estimated that by 2050 yields in soybean production could fall by as much as 28 per cent and yields in barley production could fall by as much as 20 per cent. On the other hand, Egypt reported that the likely impact on cotton production would be favourable, with yields increasing by 17 per cent by 2050.

15. The adverse impacts of climate change on the quality and quantity of water resources were identified by several of the countries as a major challenge. In particular, Egypt, Ghana, Jordan, Mali, Nigeria and Philippines identified this as a priority area. The Maldives stressed that water security, including in relation to drinking water and wastewater, was of utmost importance. Jordan identified the scenario in which water resources would be most vulnerable to climate change impacts, which would occur if temperatures were to increase by more than 2 °C and precipitation were to either remain constant or only show a modest increase (by less than 20 per cent).

16. The countries with long coastal areas and low-lying areas reported that they would be significantly affected by sea level rise, in terms of the population being put at risk and salt water intrusion on cropland. Some of the countries reported that the warming of the ocean will likely result in a decrease in the fish catch. In one of the scenarios considered for 2100, Ghana estimated that a total of 1,110 $km^2$ of its coastal land may be lost as a result of sea level rise, putting at risk an estimated 132,200 of its population.

# III. Key findings of the country studies

## A. Financial needs assessments

### 1. Financial needs for mitigation

17. The estimated short- and long-term costs of mitigating GHG emissions as reported by the countries range from USD 45 million to USD 33.01 billion. Table 2 contains information on the aggregated estimated financial costs of mitigation identified by most of the countries for 2020 and 2050. Table 3 contains information from those countries which used different time horizons for assessing their financial needs for mitigation.

18. All of the countries included information on mitigation measures in their reports. In assessing their financial needs for mitigation, most of the countries used up to 2020 as the short-term and up to 2050 as the long-term period for projecting mitigation measures and the financial resources needed. Some of the countries assessed the reference and climate mitigation scenarios to identify priority measures and their accompanying costs. While most of the countries provided the total cost of mitigation, some included a breakdown of the costs of measures by sector and subsector. Others calculated the difference between the full cost and incremental cost of implementing mitigation measures.

19. Two of the countries are aiming to achieve carbon neutrality by 2020 and 2021, respectively, which drives their mitigation policies. Others have passed laws, such as on the promotion of renewable energy and energy efficiency technologies and on the protection and enhancement of forests, as a basis for pursuing mitigation measures.

20. The mitigation analyses conducted by the countries are based on their mitigation potentials. Using these analyses, the countries then assessed the financial costs of shifting from fossil fuels to renewable energy sources, promoting energy efficiency and implementing measures to reduce emissions from the waste, agriculture and forestry sectors by 2020 and 2050. Several of the countries assessed their capacity to reduce emissions and the economic impacts of adopting goals for GHG emission reductions. Some countries' projections indicate that economic growth can be pursued while reducing GHG emissions compared with the established baseline.

21. The key sectors identified by the countries for mitigation include energy, transport, agriculture, forestry and waste. For the energy sector, the measures were categorized into those relating to energy efficiency, renewable energy, fuel switching and landfill gas. While most of the countries identified energy as the priority sector for mitigation measures, others reported forestry, agriculture and transportation as their priority areas.

22. In estimating the costs of mitigation, the countries used different methodologies and approaches, such as: the GHG abatement cost curve; cost–benefit analysis; the Model for Energy Supply Strategy Alternatives and their General Environmental Impacts (MESSAGE); the Market Allocation (MARKAL) model; the Model for Analysis of Demand for Energy (MADE II); and country assessments based on the cost of existing pilot projects. However, the limited availability of data on recent emissions, projected growth and associated costs by sector has proved to be a bottleneck for the NEEDS analysis in the participating countries. Further, the use of different models for constructing baselines and mitigation scenarios makes the cross-country comparison of cost estimates difficult. The use of varying discount rates and projected timelines adds to this complexity.

Table 2

**Aggregated estimated short- and long-term financial costs of mitigation as reported by countries participating in the National Economic, Environment and Development Study for climate change project**

(United States dollars)

| *Country* | *Short-term costs (2020)* | *Long-term costs (2050)* | *Additional information* |
|---|---|---|---|
| Egypt | 4.2 billion | 12.6 billion | Cost estimates for mitigation measures in the energy sector |
| Ghana | 340.6 million | 422.7 million | Cost estimates cover the energy, forestry and transportation sectors |
| Jordan | 8.5 billion[a] | 7.84 billion[b] | Cost estimates for the energy and waste sectors |
| Maldives | 1.1 billion | | Government estimated that it will require USD 110 million annually to achieve its goal of carbon neutrality by 2020 |
| Mali | 11.01 billion | 33.01 billion | Cost estimates for the forestry and agriculture sectors, including the replacement of chemical fertilizers |
| Nigeria | 874 million (annually) | 1.41 billion (annually) | Cost estimates for mitigation measures in the energy sector to reduce emissions by 25 per cent |
| | 2.9 billion | 4.8 billion | Cost estimates for the afforestation sector |
| | 1.78 billion | 2.98 billion | |
| | 444 million | 889 million | Cost estimates for agroforestry |
| | | | Estimated costs of establishing forest units |

[a] This figure represents the total cost of identified mitigation projects in the energy and waste sectors up to 2020. Of this amount, incremental costs of USD 3.22 billion for the energy sector and USD 125 million for the waste sector were identified.

[b] This figure represents only the incremental costs of potential mitigation measures up to 2050.

Table 3

**Other information on the costs of mitigation measures, assessed using different time horizons by countries participating in the National Economic, Environment and Development Study for climate change project**

| *Country* | *Information on costs of mitigation measures* |
|---|---|
| Costa Rica | Investment required to support mitigation measures from 2010 to 2030 estimated at USD 7.8 billion, which is equivalent to 30 per cent of the |

| *Country* | *Information on costs of mitigation measures* |
|---|---|
| | country's gross domestic product in 2009 |
| Indonesia | The average annual cost of abatement for all sectors until 2020 is equal to about EUR 5.95 billion to achieve the 26 per cent reduction target (first mitigation scenario) and about EUR 12.02 billion to achieve the 41 per cent reduction target (second mitigation scenario) |
| | The average annual cost of abatement for all potential measures for all sectors by 2030 is EUR 12.84 billion for both scenarios |
| Philippines | The baseline scenario for the electricity sector is that total primary energy supply (TPES) will grow by more than 52 per cent between 2007 and 2030, of which hydropower will contribute 23.6 per cent and biomass 11 per cent, respectively, to the total energy mix. The required investment in the electricity sector under this scenario is about USD 28.74 billion |
| | Under the maximum scenario, the share of renewable energy in electricity generation is projected to reach 35 per cent of TPES, and energy self-sufficiency to reach 60 per cent, between 2009 and 2020. The investment required under this scenario is about USD 30.51 billion |
| | The USD 2 billion difference between the required investments for the baseline and maximum scenarios is the calculated incremental cost of mitigating greenhouse gas emissions |

## 2. Financial needs for adaptation

23. The estimated short- and long-term costs of adaptation measures as reported by the countries range from USD 161.5 million to USD 20.69 billion. Table 4 reflects the aggregated estimated costs of adaptation measures for 2020 and 2050 for those countries that provided relevant cost estimates.

24. Eight countries provided information on the estimated costs of adaptation measures in their reports. Some of the countries provided information on the estimated costs of adaptation up to 2020 (short term) and up to 2050 (long term). However, these cost estimates are based on preliminary assessments for only a limited number of sectors, since most of the countries have not undertaken an in-depth financial cost assessment.

25. The key sectors assessed by the countries include health, water, coastal zones, forestry, agriculture, energy and transportation. In addition, some of the countries assessed the impacts of climate change on human settlements, infrastructure development and tourism. Several also assessed the costs of conducting further climate change assessments, capacity-building and training, and setting up observation systems.

26. Some of the countries estimated the cost to the economy of climate change impacts. For example, in Lebanon climate change is anticipated to contribute to the expected increase in the food import bill by 2050, while for Nigeria studies showed that climate change could result in a loss in gross domestic product of 6–30 per cent by 2050, worth an estimated USD 100 to 460 billion.

27. In estimating the costs of adaptation, the countries used different methodologies and approaches, such as the indicator method to determine the spatial changes, coupled with principal component analysis. In conducting vulnerability assessments and estimating the costs of adaptation, some of the countries identified adaptation scenarios, prioritized adaptation measures in specific sectors and estimated the costs of these measures, on the basis of expert knowledge and the review of secondary literature. Overall, however, assessing the costs of adaptation continues to be a challenge for most of the countries,

owing to the lack of appropriate methodologies and data. An additional challenge comes from difficulties in differentiating direct adaptation from development policies and measures. As was the case for mitigation, the countries used different models for their adaptation scenarios, which makes the cross-country comparison of cost estimates difficult.

Table 4
**Aggregated estimated short- and long-term financial costs of adaptation as reported by countries participating in the National Economic, Environment and Development Study for climate change project**
(United States dollars)

| *Country* | *Short-term costs (2020)* | *Long-term costs (2050)* | *Comments* |
|---|---|---|---|
| Egypt | 2.8 billion | 4 billion | Cost estimates cover observation systems, agriculture, irrigation, coastal zones, socio-economic studies of the cost of adaptation, and capacity-building and training for adaptation |
| Ghana | 697.2 million | 701.7 million | Estimates of the cost of containing the effects of climate change on health, agriculture and coastal zones |
| Jordan | 6.90 billion[a] | 7.79 billion[b] | Cost estimates only for the water and agriculture sectors |
| Maldives | 279.5 million | 161.5 million | Cost estimates for measures in relation to water, coastal protection, health, flood control, settlements and infrastructure |
| Nigeria | 11.45 billion (annually) | 20.69 billion (annually) | Estimated incremental costs of adaptation measures in relation to water, agriculture, health and transportation |

[a] This figure represents the total cost of identified adaptation projects in the water and agriculture sectors up to 2020. Of this amount, the additional cost of adaptation was estimated at USD 2.64 billion for the water sector and USD 154.3 million for the agriculture sector.
[b] This figure represents only the additional costs of potential adaptation programmes up to 2050.

## B. Financial and policy instruments available

### 1. Financial flows for mitigation and adaptation

28. Several of the countries assessed the financial flows that directly and indirectly support climate change activities, such as the allocation of funds in the national budget, and multilateral and bilateral sources, including regional financial initiatives. While some of the countries identified potential sources for financing climate change activities, others listed

existing sources from which they had already received support. In terms of the level of detail of this information, most of the countries provided only a list of institutions which provide financial support to address climate change. However, some of the countries, such as Indonesia and the Philippines, gave further details on available financial support, including an analysis of the different sources.

### 2. National budgets

29. Most of the countries reported allocating support for climate change measures in their national budgets. For example, the Government of Indonesia earmarked USD 213 million in 2009 to improve public awareness and promote inter-agency cooperation in dealing with the impacts of climate change, while the Government of the Philippines allocated USD 1.57 billion between 2004 and 2009 to support direct and indirect climate change measures in various sectors, including agriculture, energy and forestry. The Government of the Maldives is currently reviewing a proposed allocation in its national budget to support the implementation of a climate-resilient urban area project.

30. Some of the countries reported that a significant proportion of their national budget is increasingly being devoted to climate change measures or to climate change sensitive sectors of the economy, such as energy, forestry, agriculture, water, health and coastal zones. Government resources are also being allocated to provide co-financing for externally funded climate change projects and the establishment of trust funds. Examples of such funds are the Renewable Energy Fund of Jordan and the proposed Nationally Strategic Climate Change Trust Fund (NSCCTF) of Nigeria.

31. Aside from countries' national budgets, resources from state-owned corporations and investment agencies are also being utilized to promote investments in climate change technologies. The National Bank for Agricultural Development of Mali is employing about USD 80 million to support its rural sector, including through climate change relevant measures, while the Government of Indonesia established the Sarana Multi Infrastruktur, which provides finance in partnership with the private sector to support climate change projects.

### 3. The Global Environment Facility

32. Most of the countries identified the Global Environment Facility (GEF) as one of the sources of climate-related financing. The GEF is an operating entity of the financial mechanism of the Convention, which manages the funds under the climate change focal area of the GEF Trust Fund, the Special Climate Change Fund and the Least Developed Countries Fund. The GEF receives guidance from the Conference of Parties on priority areas for funding, such as mitigation, adaptation, technology transfer, capacity-building, and support for enabling activities, including the preparation of national communications.

33. Most of countries participating in the NEEDS project have availed themselves of support from the GEF. The Government of Jordan, for example, received a total of USD 4.1 million from the GEF from 1996 to 2009 to support its climate change programmes and projects, while the Philippines identified 64 projects supported by the GEF covering the period 1992–2018.[4] However, the findings of the Philippine study show that the GEF and United Nations agencies play only a minor role in providing grants for climate change activities, as 84.8 per cent of the total direct grants for climate change activities over the same period are from multilateral and bilateral donors. Further, the same country study concluded that the limited amount of funds provided by the UNFCCC delivery vehicles, such as the GEF, suggests that the criteria required under the Convention of the

[4] The period refers to the project cycle.

predictability and adequacy of the financing provided by developed countries cannot immediately be ascertained.

### 4. Multilateral and bilateral sources

34. According to the countries' reports, multilateral and bilateral agencies play an important role in providing support to key sectors for addressing climate change. Several of the countries have accessed funds from the World Bank Group for mitigation and adaptation projects, including capacity-building and public-awareness raising. Some have availed themselves of, or in the process of doing so, resources from the Climate Investment Fund, managed by the World Bank, and a few have accessed finance to support piloting the programme for reducing emissions from deforestation and forest degradation in developing countries.

35. In addition, most of the countries reported receiving financial and technical support from other multilateral sources, such as the United Nations Development Programme, the United Nations Environment Programme and the European Union. For example, the European Trust Fund has committed USD 6.5 million to the Government of the Maldives to support the implementation of its priority programmes on climate change.

36. Regional development banks such as the African Development Bank and the Asian Development Bank were also identified as sources of climate-related financing. The Government of Indonesia expects the financial flows for climate change mitigation from the Asian Development Bank in the period 2009–2011 to reach USD 78.67 million.

37. In addition, there are regional initiatives to support climate change measures, such as the Arab Environment Facility, which aims to facilitate projects promoting and strengthening sustainable development in the Arab world. As reported by Lebanon, the facility could become a mechanism to attract funds dedicated to combating climate change, among other priority environmental issues. The Economic Community of West African States and the African Union were reported by Nigeria as other regional initiatives aimed at securing additional and complementary flows of financial resources to address regional climate change issues.

38. Most of the countries identified bilateral agencies as another of the sources of climate change related financing. The agencies noted in the country reports include: the Agence Française de Développement, the Australian Agency for International Development, the Canadian International Development Agency, the Danish International Development Agency, the Japan International Cooperation Agency, the Norwegian Agency for Development Cooperation, the Swedish International Development Cooperation Agency and the United States Agency for International Development (USAID). The project of USAID in Egypt to support the establishment of energy service companies to promote energy efficiency is one example of the bilateral support provided.

39. The findings of some of the country studies show that most of the resources provided by bilateral agencies came in the form of grants, while financial support provided by multilateral agencies was mostly loans. For example, the Philippines accessed a total of about USD 1.09 billion in loans from multilateral and bilateral agencies, of which about USD 492 million was allocated for direct climate change mitigation and about USD 587 million to adaptation projects.

### 5. The private sector and market mechanisms

40. The private sector plays an important role in addressing the need for investment in mitigation and adaptation. A growing number of corporate foundations allocate financial resources to support climate change. For instance, corporate foundations in the Philippines have allocated USD 32 million to support climate change activities.

41. Some of the countries identified the need to stimulate private-sector investment by supporting a favourable investment environment through measures such as reducing the risks involved in low-carbon investments, improving the predictability of relevant policy, and strengthening capacity-building and knowledge transfer to increase awareness of opportunities for reducing emissions.

42. Some of the countries provided information regarding access to the clean development mechanism (CDM) and their carbon market potentials. For example, Indonesia has a share of 1.2 per cent in the total number of CDM projects with issued certified emission reductions in the world, while Costa Rica identified six registered projects for the period 2005–2008.

43. The following tables provide additional information reported by countries on the sources and amount of climate grant financing for mitigation (table 5) and for adaptation (table 6) as well as on the sources and amount of climate loan financing (table 7).

Table 5

**Sources and amount of climate grant financing for mitigation reported by countries participating in the National Economic, Environment and Development Study for climate change project**

(United States dollars)

| *Source* | *Philippines* | *Maldives* | *Jordan* | *Indonesia* |
|---|---|---|---|---|
| Bilateral | 71 617 180 | 11 318 988 | 3 997 000 | 41 260 000 |
| Global Environment Facility (GEF) | 3 580 105 | 750 000 | - | - |
| Multilateral | 544 160 302 | 369 000 | - | 56 684 250 |
| Multilateral-GEF | 11 965 000 | - | - | - |
| Non-governmental organizations | 62 798 | - | - | - |
| Private/foundations | 5 000 000 | - | - | - |
| Private sector | | 200 000 000 | - | - |

Table 6

**Sources and amount of climate grant financing for adaptation reported by countries participating in the National Economic, Environment and Development Study for climate change project**

(United States dollars)

| *Source* | *Philippines* | *Maldives* | *Jordan* |
|---|---|---|---|
| Bilateral | 59 636 121 | 1 855 200 | 4 400 000 |
| Global Environment Facility (GEF) | 254 500 | 4 485 000 | 100 000 |
| Multilateral | 157 255 460 | 123 680 | - |
| Multilateral-GEF | 152 169 088 | - | - |
| Non-governmental organizations | 185 000 | - | - |
| Private/foundations | 347 826 | - | - |

Table 7
**Sources and amount of climate loan financing reported by countries participating in the National Economic, Environment and Development Study for climate change project**
(United States dollars)

| *Source* | *Philippines* | *Maldives* | *Indonesia* |
|---|---|---|---|
| Bilateral | 110 522 125 (mitigation) | | 30 768 000 000 (Japanese Yen) |
| | 78 988 524 (adaptation) | 38 380 000 (adaptation) | (mitigation and adaptation) |
| Multilateral | 329 427 855 (mitigation) | | |
| | 41 500 000 (adaptation) | | 292 067 000 (mitigation) |
| Multilateral-Global | 51 685 199 (mitigation) | | |
| Environment Facility | 166 104 115 (adaptation) | | |

## 6. Policy instruments

44. Most of the countries reported a variety of policy instruments, both existing and planned, available to address climate change mitigation and adaptation at the national and the subnational level.

45. Several of the countries have developed, or are currently in the process of developing, policy frameworks which directly address climate change. For instance, Nigeria is in the process of finalizing its National Climate Change Policy and Response Strategy, while the Philippines has already adopted the Climate Change Act, which provides a comprehensive legal and policy framework.

46. There are also more specific policy instruments available. On the mitigation side, Indonesia reported that its Ministry of Industry has formulated a road map and strategy for reducing GHG emission in four key industries, namely cement, pulp and paper, steel, and textiles. Meanwhile, the Maldives is considering setting up a national mechanism for carbon trading and linking it to the international markets or applying a carbon tax.

47. Nigeria and Mali reported that climate change concerns are integrated into their existing national development strategies and policies. In cases where climate change has not been mainstreamed into national development strategies, these strategies may still help to meet the objectives of climate change mitigation and adaptation in one way or another. For instance, Jordan reported that its National Agenda, which is a 10-year development programme, may lead to the indirect mitigation of and adaptation to climate change.

48. Some of the countries reported that they do not have specific climate change policies in place at the national level but that climate change concerns are addressed through existing environmental policy frameworks. Many of the countries also reported that strengthening existing environmental policies helps to address climate change. In Ghana, for instance, the framework National Environment Policy seeks to reconcile economic development with the conservation of natural resources by implementing an environmental quality control programme, supporting environmental research, establishing adequate legislation and institutional arrangements, and other measures. Nigeria and the Philippines reported similar policy frameworks for the protection of the environment, as relevant to climate change policies.

49. The countries also reported sectoral policies available in relation to both climate change mitigation and adaptation. On the mitigation side, several of the countries reported various policies relating to improving energy efficiency and promoting renewable energy. Here, Costa Rica, Egypt and Ghana identified the need to promote energy efficiency, with Egypt noting that funding in the form of ‘soft’ lending is needed for several start-up energy

efficiency projects in industry. The Philippines has a Renewable Energy Act in place, adopted in 2008, while the Maldives is currently considering adopting a bill to implement renewable energy feed-in tariffs and other policies to promote renewable energy. Lebanon identified policy instruments for promoting renewable wind energy at the national and business levels. At the national level, these policy instruments include: promoting public–private partnerships, developing frameworks for bilateral and/or multilateral cooperation, and collecting and disseminating information. At the business level, the policies include: establishing a research entity on wind production, identifying funding for energy innovation, strategic planning for energy mitigation, implementing a framework for wind energy management, developing expertise, and training staff.

50. Tax instruments are being considered in Indonesia and the Maldives to stimulate investment in clean technologies and hence aid climate change mitigation. Indonesia reported the following available instruments: tax differentiation, tax breaks, subsidies, tax treatment of carbon market revenue, and others. The Maldives is already working on a tax reform in order to provide tax levies and subsidies to increase the attractiveness of investment in the provision of affordable basic utility services, such as water, energy, sewage and waste management, as well as to increase the tax base of businesses in order to raise revenue in the national budget and ensure incentives for green corporate behaviour. In relation to existing policies, the Maldives reported a positive experience with levying an import tax on renewable energy technology, which attracts private investors.

51. Some of the countries are considering specific measures to reduce emissions in the transport sector. The Maldives identified the following available instruments: fuel taxes, differentiation of port dues, higher import duty on vehicles and emission taxes, banning the import of reconditioned vehicles, technologies for the management of traffic information, and market-based options for the trading of carbon credits. Indonesia noted that charges in the transportation sector, such as taxes on fuel per litre, road tolls and airline traffic taxes, would raise revenue and encourage greater efficiency in fuel use.

52. As for the forestry and agriculture sectors, many of the countries have specific policies currently being implemented or developed. For instance, Costa Rica is considering: continuing the current Payment for Environmental Services (PES) programme, strengthening the PES programme, implementing agropastoral systems and reducing the use of agrochemicals. The PES programme was designed as a financial mechanism to promote the conservation of the country's forest resources. It establishes that environmental services provided by forests and forest plantations have a direct effect on protecting and improving the environment and, for that reason, landowners should receive payments in compensation for the benefits that their forests and plantations provide to society. In the Philippines, there are several relevant programmes that deal with the management of forests and natural resources outside protected areas. Among them, Community-Based Forest Management is considered to be the national strategy for sustainable forest management and social justice and is seen as a key programme in the forestry sector that can meet the challenges of climate change.

53. With regard to the agriculture sector, Egypt reported that there is public recognition of the potential vulnerability of the sector, coastal zones and the Nile basin due to possible climate changes, and that efforts are under way to integrate climate change issues into national plans. Egypt carries out sectoral and legislative reforms at the national level aimed at encouraging private–public partnerships and enhancing private-sector involvement in climate change mitigation and adaptation projects. Lebanon also reported several policies that could benefit the agriculture sector, including: implementing reliable metering of resources for agricultural production, building institutional capacity, capitalizing on human resources, and integrating the management of agricultural networks.

54. Other relevant policies reported that help with adaptation to climate change relate to disaster risk reduction. For instance, the Philippines is in the process of adopting a bill to address disaster risk reduction and management. The bill proposes the adoption of principles and strategies consistent with the international standards set by the Hyogo Framework for Action. It encourages the Government to shift its focus onto disaster prevention and risk reduction by putting more emphasis on strengthening the communities' and peoples' capacity to anticipate, cope with and recover from disasters as an integral part of development programmes.

55. Furthermore, several of the countries reported the need to promote climate change research and monitoring efforts. For instance, Lebanon noted the need to build both human and institutional capacities in the public sector in relation to all aspects of adaptation research. In Ghana, the Government already aims to promote and support research programmes for better understanding of the different ecological zones and the factors affecting them and for the development of appropriate technologies for the environmentally sound management and use of local resources, including energy resources.

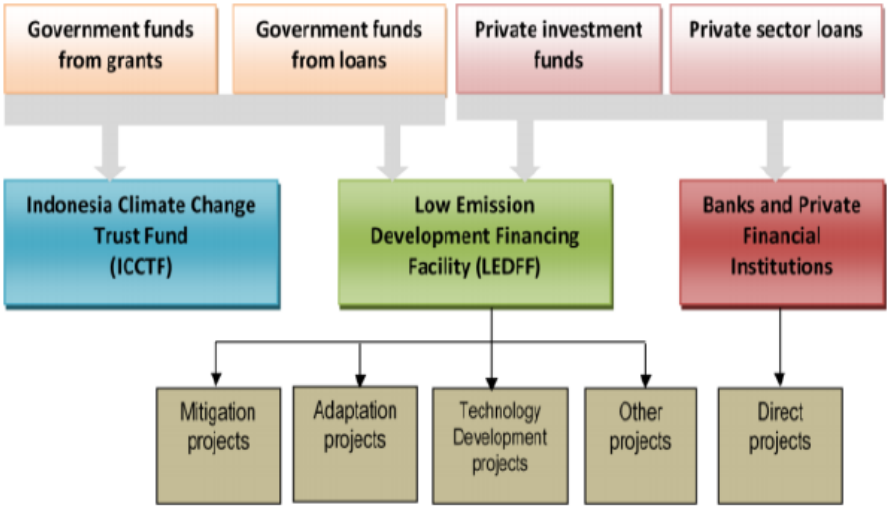
## 7. Climate change trust funds

56. The establishment of climate change trust funds was identified by some of the countries as one of the means to mobilize and manage climate-related finance. For example, the Government of Nigeria is in the process of establishing NSCCTF in response to the need to broaden the scope of national intervention to involve all levels of governance in order to effectively address climate change. The focus of NSCCTF is mostly on long-term planned response strategies, policies and measures, rather than on short-term climate change activities. It is envisaged to serve as a catalyst for leveraging additional resources from bilateral and multilateral channels.

57. The Government of Indonesia reported its plans to establish two complementary financial windows, the Indonesia Climate Change Trust Fund (ICCTF) and the Low Emission Development Financing Facility (LEDFF). ICCTF is intended to co-finance investments in adaptation to and the mitigation of climate change. Initially the resources of the fund would consist of grants from bilateral and multilateral development partners. The proposed overall objective of the fund is to promote coordinated national action to respond to climate change in Indonesia.

58. LEDFF is an initiative for a public–private fund to support low-carbon development. It is expected to leverage private investments, coordinate the mobilization of capital on a large scale, and increase confidence in the Government's long-term commitment to efforts to mitigate climate change. The figure below shows the role of the two funds in mobilizing resources to support mitigation and adaptation measures.

**The role of climate change funds in Indonesia**




*Source*: Indonesia's country report for the National Economic, Environment and Development Study project.

## C. Lessons learned

59. For most of the countries engaged in the NEEDS project, assessing the costs of mitigation and adaptation measures was a challenge, owing to institutional and methodological constraints. While tools and methodologies are widely available for estimating the costs of mitigation measures, they are rather scarce in relation to adaptation. One of the specific challenges is that most of the measures identified are not only for the purposes of adapting to climate change but also have other development-related benefits. Available information is often dispersed across different government agencies, requiring inter-agency cooperation in order to compile the comprehensive set of data needed for cost analyses.

60. Robust assessments of mitigation, vulnerability and adaptation are crucial for calculating the costs of mitigation and adaptation measures. Only two of the countries involved in the NEEDS project have submitted their second national communications; most are still in the process of completing them. While tools and methodologies for assessing adaptation have advanced since the preparation of the initial national communications, there is still a need to further improve them, in particular with regard to generating climate scenarios, including downscaling the models, and developing bottom-up approaches to assessments.

61. Most of the countries identified the financial flows, both from external and domestic sources, to support mitigation and adaptation measures. However, scaling up the implementation of these measures, for example pursuing carbon neutrality, requires large investments and the existing resources are inadequate to address this need.

62. While the mainstreaming of climate change into national development plans and priorities is being undertaken by most of the countries involved in the NEEDS project, these countries still recognize the need to establish an appropriate institutional framework and mechanism to facilitate the integration of climate change into development planning.

63. The lack of awareness of the issue of climate change and the inability to mainstream climate change into national and subnational plans hinders the development of financial and policy instruments to support climate change mitigation and adaptation.

64. Most of the countries recognized the benefits of engaging multiple stakeholders in their studies, which made it easier to obtain the required information and to stimulate dialogue on how to integrate climate change into national development plans. However, some of the countries identified the lack of coordination among institutions as one of the challenges faced in conducting their studies.

65. Several of the countries identified the need to establish and/or to strengthen inter-institutional coordination to address climate change. Some identified the need for government agencies to coordinate the mobilization of resources from multilateral and bilateral sources to ensure that they do not overlap.

66. Some of the countries reported private-sector engagement in addressing climate change either through direct investment or through the provision of grants by their corporate foundations. As the implementation of climate change measures requires a large amount of resources, private-sector investment and market mechanisms will have to be scaled up. In this regard, policies to provide incentives to promote environmentally friendly technologies and to encourage private-sector investment are necessary. The establishment of trust funds and the development of financial instruments are some of the measures available to promote public–private sector partnership.

67. Some key challenges and opportunities identified by the countries in the implementation of the NEEDS project include:

(a) The need to improve access to information and to enhance understanding of environmental issues;

(b) The importance of mainstreaming climate change considerations in the process of operationalizing development plans at the national and the local level;

(c) The lack of expertise and databases for the conduct of comprehensive financial needs assessments;

(d) The limited funds and information available for conducting their studies, which, as a result, covered key sectors only.

## D. Proposed next steps

68. In the course of the NEEDS project, several of the participating countries realized the need to develop a specialized and coordinated climate change policy framework. The elements of such a framework as reported by the countries would include: a GHG inventory data system, a comprehensive mitigation strategy and an adaptation plan. Countries also highlighted the importance of mainstreaming climate change within their national development strategies and action plans. Strengthening national capacity at the federal, state and local government levels to plan and respond effectively to climate change impacts was also reported as a necessary step. In addition, some suggested establishing institutions dedicated to climate change, for example national climate change committees.

69. On mitigation, countries reported the need to: develop local capacities to use GHG mitigation methodologies, tools and software; formulate legal and institutional frameworks to promote energy efficiency and renewable energy options as well as the enforcement of existing legislation; secure funds for the proposed mitigation projects for the energy and waste sectors; and implement GHG mitigation projects, including small-scale CDM projects. It was also reported that the NEEDS project provides a basis for starting the

process that leads to a low-carbon economy. The following steps were proposed in this regard: piloting alternative development programmes in selected provinces, with a view to scaling up to the national level later; refining the GHG abatement cost curve, on the basis of input from relevant stakeholders and continued analysis of key sectors; developing national action plans for reducing emissions; and developing a coherent policy position in the UNFCCC process.

70. With regard to reducing vulnerability and adapting to climate change, countries reported the need to develop comprehensive multisectoral national adaptation action plans, with the participation and engagement of the relevant institutions and stakeholders, including ministries of environment, water, agriculture and health.

71. In addition, it was suggested that climate change and disaster risk reduction should be integrated into national polices, development plans and programmes. Steps proposed include: compiling an inventory of and validating climate change and variability-driven hazards and disasters, as well as policy interventions, including preparedness, mitigation, response and management.

72. Other steps proposed by the countries relate to specific sectors, such as water and agriculture, including: hydrological modelling, mapping/demarcating flood-prone communities and landscapes, developing strategies in relation to water accessibility and conservation, and protecting traditional farming communities' livelihoods. In addition, some of the countries proposed that priority should be given to public investments in infrastructure, both technological (Internet and telecommunications) and transport-related (roads and public transportation), which would complement adaptation opportunities as well as improve the business climate.

73. Many of the countries noted that the implementation of climate change policies depends on the availability of funds from multilateral, bilateral and national channels as well as from the private sector. The necessary funding will be required for public and private efforts to overcome barriers and market distortions that limit the allocation of resources to advanced technologies necessary to mitigate GHG emissions. In particular, foreign direct investment can make an important contribution if the resources are channelled towards environmentally friendly sectors and industries, renewable energy sources and more efficient transport systems. In addition, countries reported that adequate funding resources are necessary to support national climate change commissions, conduct studies and implement adaptation measures for the water and agriculture sectors. To channel the financial resources effectively, it was proposed to establish national climate change trust funds.

74. Enhancing research activities on climate change and strengthening research institutions were also proposed by countries as next steps. In this regard, they proposed the following areas for comprehensive analysis: an up-to-date GHG emission profile, and projection and mitigation strategies; socio-economic impacts of climatic change; and the detailed costing of adaptation initiatives for planning purposes. Countries also suggested the establishment of independent national scientific and technological committees to offer advisory support to top-level decision makers and of national research centres on climate change.

75. Raising public awareness in relation to the opportunities and risks presented by climate change was identified as an important step to address climate change. Here, countries suggested for example building communication programmes targeting the general population and influencing key decision makers as well as engaging private companies, non-governmental organizations, philanthropic organizations and donor countries in developing national action plans.